Research Journal of Computer and Information Technology Sciences _____ISSN 2320 – 6527
Vol. **7(1),** 1-6, June **(2019)** *Res. J. Computer and IT Sci.*

Implementation of fuzzy logic method for physical and mental illness by smart phones

S. Petricia Leema Roseline[1], Priti Kandhve[1] and R. Mohan[2*]
[1]Dept of Computer Science, Christ College, Pune, MS, India
[2]Dept of Mathematics, College of Military Engg., Pune, MS, India
mohan_rayappan@yahoo.com

Available online at: www.isca.in
Received 23rd March 2019, revised 25th May 2019, accepted 20th June 2019

Abstract

Using Fuzzy logic, different types of complex systems can be analyzed more effectively than using traditional approaches. In revolutionary technology, a smart phone emits radio frequency energy which can be absorbed by the tissues in the body. Sleep dispossession is one of the common bad effects of using smart phones. Moreover phones produce light effects which can damage our eye sight. In this paper, we analyzed smart phoned are also found to have a negative impact on health issue.

Keywords: Fuzzy logic, MatLab, centroid, rule based system, fuzzification.

Introduction

This research work is giving some awareness and advice about health. Fuzzy logic is used to analyze and diagnose negatively affected person by the smart phone. Fuzzy has been deemed to be the best methodology, mainly because of its rule based system. To evaluate the performance and implementation of simulation model we used MATLAB tool software.

L.A. Zadeh[1] proposed fuzzy sets. Mamdani[2] suggested control of simple dynamic plant application using fuzzy algorithm. Zhen and Feng[3] suggested the design of neural network fuzzy controller in washing machine.

George and Yuan[4] developed fuzzy sets and fuzzy logic. Fuzzy logic based control system suggested by Kumar and Haider[5].

Mendel[6] presented fuzzy logic system for engineering. Hellendron and Thomas[7] proposed defuzzification in fuzzy Controllers. Yazid and Mouftah[8] suggested congestion control methods for BISDN.

Lohani and Hasan[9] suggested the design of an improved controller microchip for washing machine. Virkhare and Jasutkar[10] developed Neuro-Fuzzy controller based washing machine. Petricia Leema Roseline[11] developed unit consumption under fuzzy logic control of washing machine.

In this paper a model using fuzzy logic with three inputs and two outputs is proposed. This paper developed to analyze and diagnose the negatively affected person by the smart phones.

Structure of Fuzzy Logic System

Fuzzy inputs, outputs rule and defuzzification are given in Figure-1.

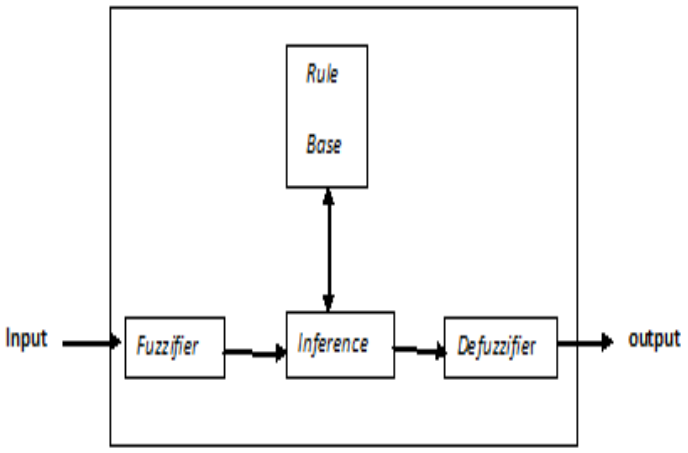

Figure-1: Structure of Fuzzy Logic System.

Fuzzy takes the system of information in normal language and converts it to values. The inputs are associated with membership functions are in form of words such as text, audio, video. Fuzzy system is determined the variables of input and output values such as less, more, extreme etc. are being selected. Afterwards, rules are being developed. Using those rules the relationship of input –output is developed. Using fuzzified inputs outputs are being produced and hence rules are determined. Those fuzzified outputs must be converted into real values. These real values can be used in real system. This system of procedure is known as defuzzification.

Proposed Design of Fuzzy Logic

Input parameters: i. Age group, ii. No. of hours, iii. Mode (Audio, Video, Text).

Output parameters: i. Physical illness, ii. Mental illness.

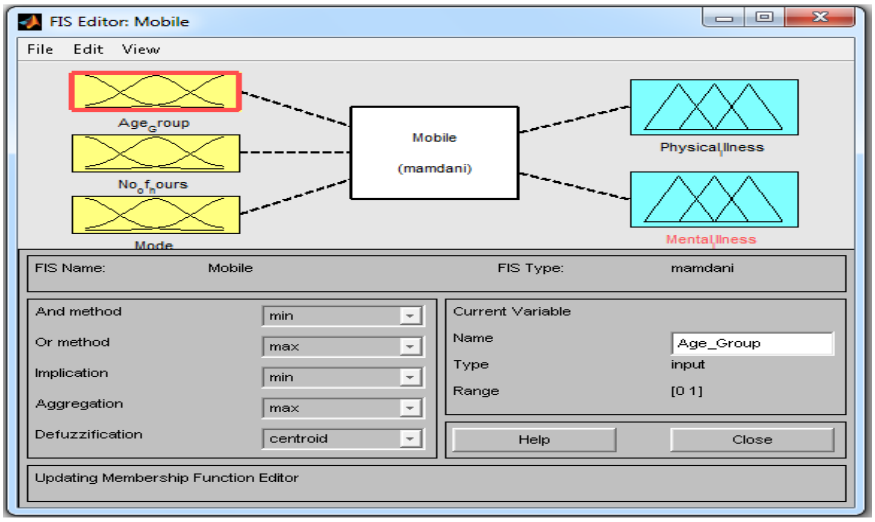

Figure-2: MATLAB Age Group Input.

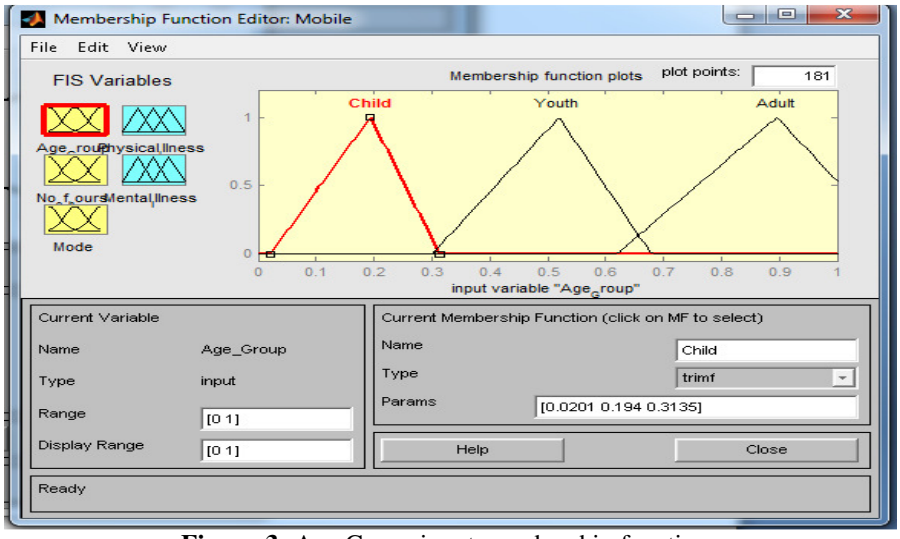

Figure-3: Age Group input membership function.

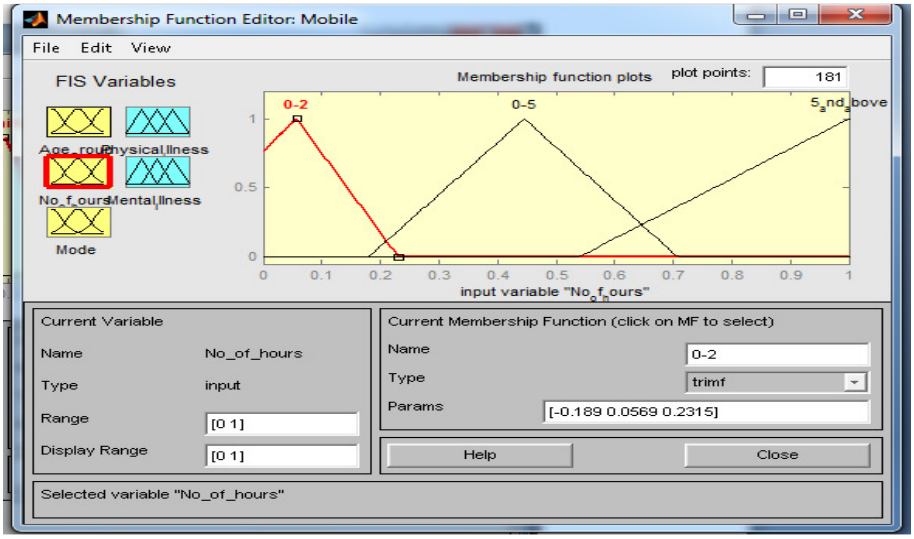

Figure-4: No. of Hours input membership function.

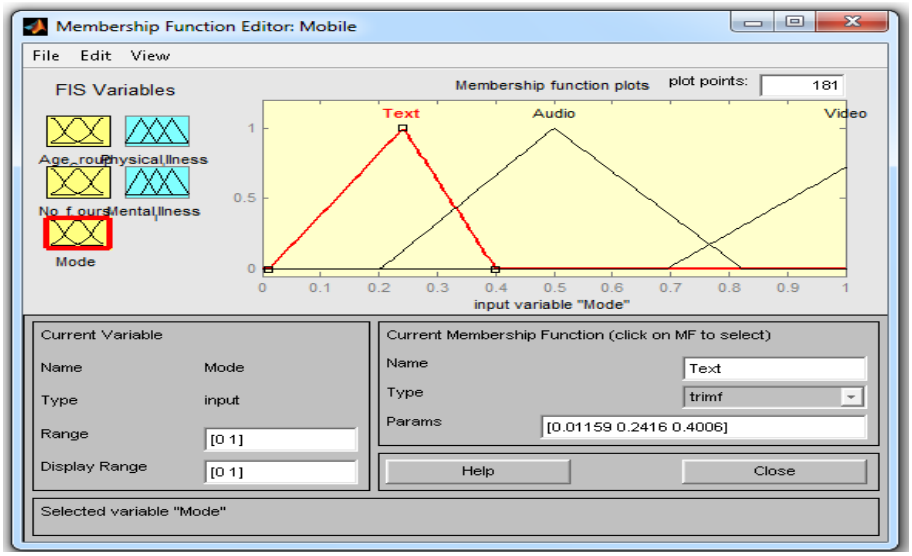

Figure-5: Mode input membership function.

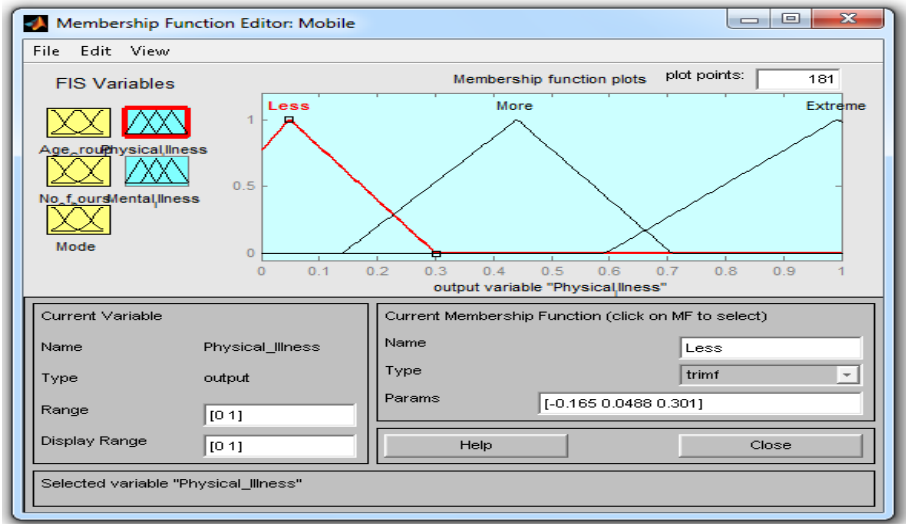

Figure-6: Physical Illness output membership function.

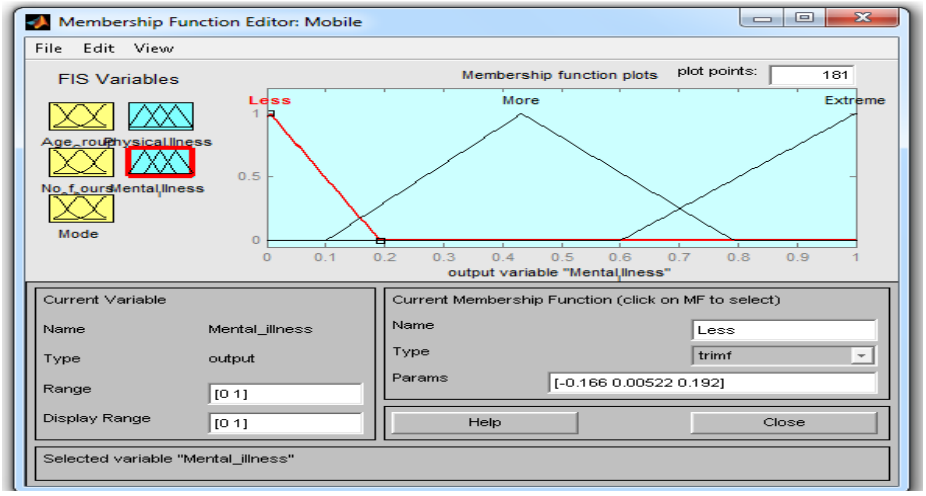

Figure-7: Mental Illness output membership function.

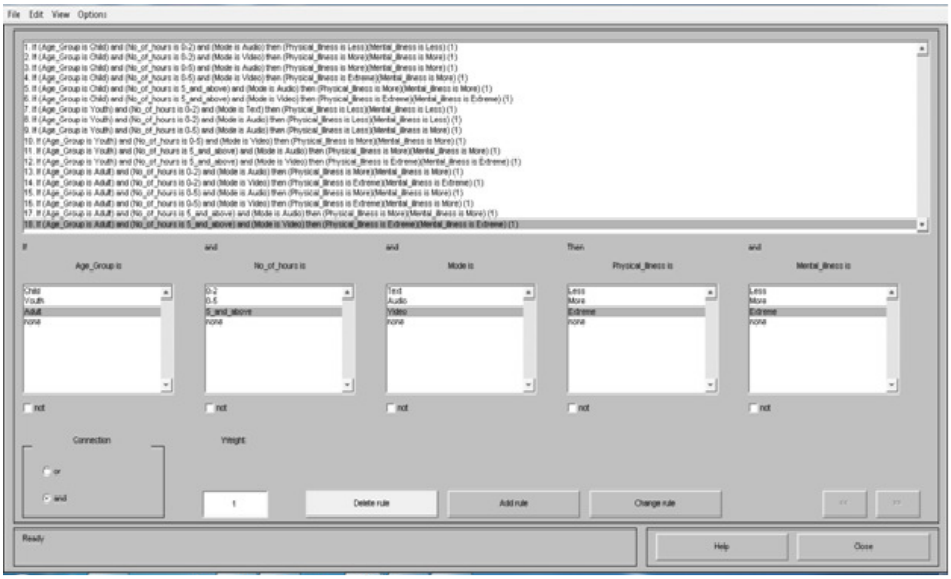

Figure-8: Membership function rules.

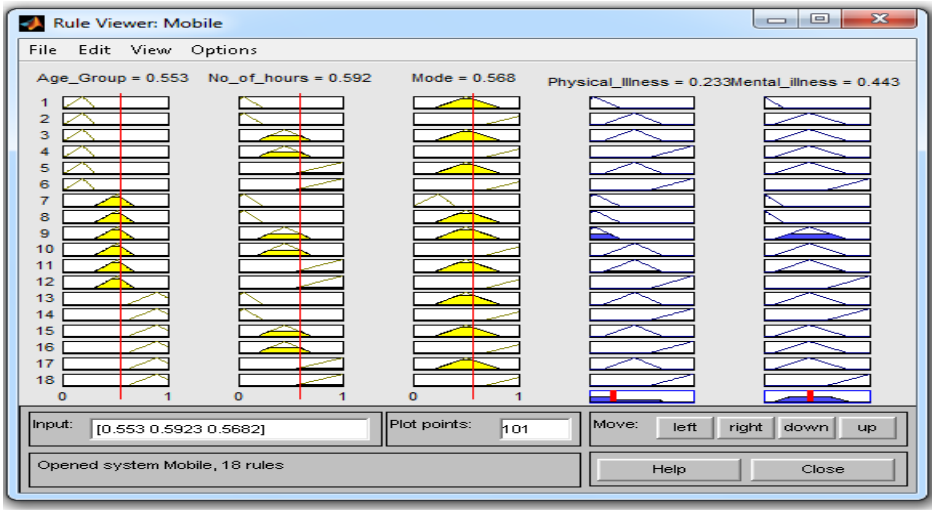

Figure-9: Rule Viewer Inputs are 0.553, 0.5923, 0.5682.

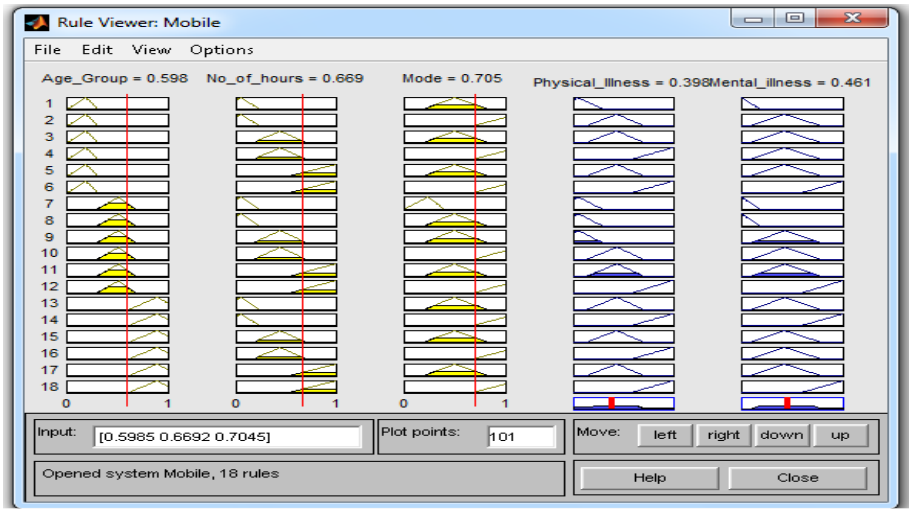

Figure-10: Rule Viewer Inputs are 0.5985, 0.6692, 0.7045.

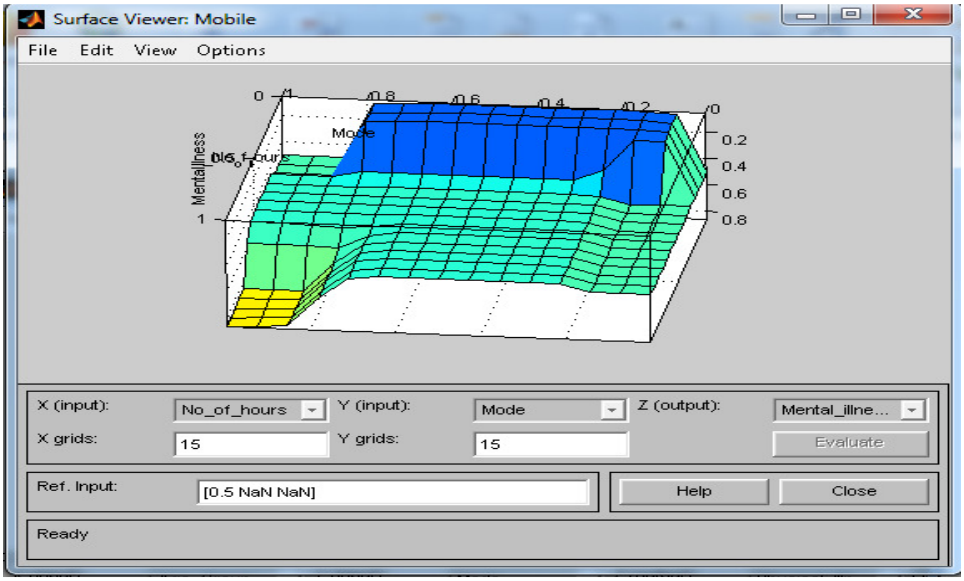

Figure-11: Surface Viewer of Mental Illness.

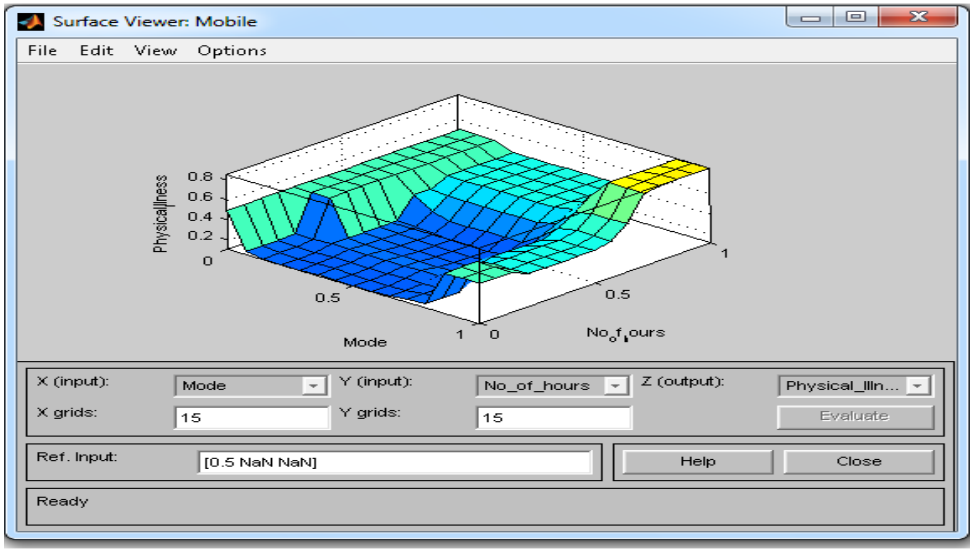

Figure-12: Surface Viewer of Mental Illness.

Conclusion

In this paper fuzzy rule based inference system for the negative impact of smart phone is analyzed with the input parameters type of age group, number of hours and different types of mode. The output parameter physical and mental illness is analysed using fuzzy logic Centroid method.

Using 18 fuzzy rules the three inputs i.e., age, No. of hours and Mode and the output value of physical and mental illness are calculated.

References

1. Zadeh L.A. (1965). Fuzzy sets. *Information and control*, 8(3), 338-353.

2. Mamdani E.H. (1974). Application of Fuzzy Algorithm for Control of Simple Dynamic Plant. *Proc. IEEE*, 121(12), 1585-1588.

3. Zhen A. and Feng R.G. (2012). The Design of neural network fuzzy controller in washing machine. *Int. Conference on Computing, Measurement, Control and Sensor Network (CMCSN), Proceeding,* Shanxi, China, 136-139.

4. George J. Kilr and Bo Yuan (2006). Fuzzy Sets and Fuzzy Logic. *PHI*, India.

5. Kumar D. and Haidr Y. (2013). Fuzzy Logic Based Control System for Washing Machine. *International Journal of Computer Science and Technology,* 4(2), 198-200**.**

6. Mendel J.M. (1995). Fuzzy logic systems for engineering: a tutorial. *Proceedings of the IEEE*, 83(3), 345-377.

7. Hellendoorn H. and Thomas C. (1993). Defuzzification in fuzzy controllers. *Journal of Intelligent & Fuzzy Systems*, 1(2), 109-123.

8. Yazid S. and Mouftah H.T. (1992). Congestion control methods for BISDN. *IEEE Communications Magazine*, 30(7), 42-47.

9. Lohani P. and Hasan S.R. (2009). Design of an Improved Controller Microchip for Washing Machine. *16th Annual Electronics Conference,* New Zealand, Dunedin: Otago University, 20-26**.**

10. Virkhare N. and Jasutkar R.W., (2014). Neuro-Fuzzy Controller Based Washing Machine. *International Journal of Engineering Science Invention*, 3(1), 48-51.

11. Petricia Leema Roseline S. (2016). Unit Consumption under Fuzzy logic control of washing Machine. *ISCA e-publication proceedings.*

12. Mathworks (2004). MATLAB for Artificial Intelligence. The Mathworks, Inc., http:// www.mathworks.com.